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Open Science Conference on Salinity and Freshwater Changes in the Ocean
12-15 October 2015, Großer Hörsaal, Hamburg, Germany

Several theoretical and numerical studies have recently pointed out the crucial role of small oceanic structures, with typical scales of 50 km or less, on the ocean eddies (100-300 km), which are associated with the most important part of the total ocean kinetic energy. Indeed, the oceanic flow is driven by nonlinear scale interactions that transfer energy upscale (to the large-scale circulation up to 1,000 km) or downscale (typically less than 1m). Knowledge about all these scales is required to explain the dispersion and diffusion of tracers such as sea surface salinity (SSS). It also echoes the importance of knowing such scales for the calibration and validation of the ongoing Aquarius and SMOS satellite missions. In the present study, the small-scale features in SSS are examined using in situ observations collected from a thermosalinograph (TSG) during the Bifurcation cruise (Sept. 2012) operated in the southwest Pacific Ocean under the auspices of the SPICE project. The TSG data are replaced in the context of the mesoscale eddies and submesoscale ocean dynamics using a front detection approach based on a Lagrangian technique that determines the Finite-Size Lyapunov Exponents (FSLE). Several examples of interactions between mesoscale eddies and submesoscale or frontal structures in SSS will be considered to characterize the stirring and the dispersion of Lagrangian coherent structures. Estimates of the satellite products, as well as considering the biogeochemistry of the surface ocean in the region, will be also presented and discussed.